

**Commonwealth of Kentucky  
Division for Air Quality**

**PERMIT APPLICATION SUMMARY FORM**

Completed by: Herbert Campbell

General Information

Name:	Jim Beam Brands Co.
Address:	1600 Lebanon Junction Road, Boston, Kentucky 40107
Date application received:	April 24, 2006
SIC/Source description:	2085/Distillery
AFS(10-digit) Plant ID:	21-179-00014
A.I. #:	3261
Activity number:	20060002
Permit number:	V-03-009 R4

Application Type/Permit Activity

<input type="checkbox"/> Initial issuance	<input type="checkbox"/> General permit
<input checked="" type="checkbox"/> Permit modification	<input type="checkbox"/> Conditional major
__Administrative	<input checked="" type="checkbox"/> Title V
__Minor	<input checked="" type="checkbox"/> Synthetic minor
<input checked="" type="checkbox"/> Significant	<input type="checkbox"/> Operating
<input type="checkbox"/> Permit renewal	<input checked="" type="checkbox"/> Construction/operating

Compliance Summary

<input type="checkbox"/> Source is out of compliance	<input type="checkbox"/> Compliance schedule included
<input type="checkbox"/> Compliance certification signed	

Applicable Requirements list

<input type="checkbox"/> NSR	<input checked="" type="checkbox"/> NSPS	<input checked="" type="checkbox"/> SIP
<input type="checkbox"/> PSD	<input checked="" type="checkbox"/> NESHAPS	<input checked="" type="checkbox"/> Other "Cap-out" of MACT 40 CFR 63.7545(b)
<input type="checkbox"/> Netted out of PSD/NSR	<input type="checkbox"/> Not major modification per 401 KAR 51:017, 1(23)(b) or 51:052,1(14)(b)	

Miscellaneous

☐ Acid rain source

☐ Source subject to 112(r)

☒ Source applied for federally enforceable emissions cap

☐ Source provided terms for alternative operating scenarios

☐ Source subject to a MACT standard

☐ Source requested case-by-case 112(g) or (j) determination

☒ Application proposes new control technology

☒ Certified by responsible official

☒ Diagrams or drawings included

☐ Confidential business information (CBI) submitted in application

☒ Pollution Prevention Measures

☐ Area is non-attainment (list pollutants)

### Emissions Summary

Pollutant	Actual (tpy)	Potential (tpy)
PM	505.60	1,819.57
SO <sub>2</sub>	197.07	1,244.31
NO <sub>x</sub>	82.29	269.61
CO	66.97	128.99
VOC	1,903.9	2,209.32
HCl	**	*9
LEAD	0.020	0.043

\*The source has chose to "cap-out" at this limit in order to preclude MACT.

\*\* The source will use current "cap-out" potential as actual till next survey.

### **CURRENT PERMITTING ACTION: --V-03-009 R4**

#### Comments:

Jim Beam Brands Co. (JBB) has applied to the Kentucky Division for Air Quality for a significant revision of the Title V permit No. V-03-009 R3 for its Booker Noe Distillery located in Boston in Nelson County, Kentucky. The facility is proposing an overall source-wide limitation on Hazardous Air Pollutant (HAP) emissions to preclude the Maximum Achievability Control Technology (MACT) applicability of 40 CFR 63.7545(b), National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers and Process Heaters. In order to "cap-out" of MACT the facility shall limit source-wide HAPs emissions to less than 9 tons per year for any individual HAP pollutant and 22.5 tons per year for any combination of HAP pollutants. To achieve these limitations of this revision they propose to to achieve the following objectives:

1) Cap HCL emissions from the coal-fired boiler to less than 9.0 tons per year (tpy). HCL generated by the coal-fired boiler is the primary source of Hazardous Air Pollutant (HAP) emission from the facility. As such, the emission limitation on the boiler will keep overall facility-wide emissions below applicable major source thresholds (25 tpy aggregate HAP and 10 tpy individual HAP). Moreover, this emissions limitation will also allow the facility to "cap-out" of the National Emission Standards MACT for Hazardous Air Pollutans for Industrial, Commercial and Institutional Boilers and Process Heaters (40 CFR 63.754(b)).

2) Modify the emissions monitoring language for opacity from the baghouse exhaust. As an alternative to the current monitoring requirements, the facility proposes to perform a qualitative visual obversation of the opacity of emissions from the coal boiler/baghouse stack on a daily basis and maintain a log of such obversations. If visible emissions are seen, the permittee shall then assess the opacity of emissions by conducting a formal Reference Method 9 evaluation and initiate an inspection of the control equipment for potential repairs. It is noted that the current monitoring requirement is more stringent than that which was required prior to instalation of the baghouse.

3) Modify the specific control equipment monitoring and maintenance requirement on the baghouse. JBB proposes to replace existing permit language with: "The baghouse shall be operated in such a manner as to maintain compliance with permitted emission limitations in accordance with manufacturer's specifications and /or standard operating practices."

Comments: the following minor additions are included

- A new centrifuge for the evaporator process expansion
- A new tank for the barrel filling, aging and dumping
- A second beer still will be installed as part of the distillation process and the existing doubler will be replaced with a larger doubler
- A new lime silo will be added as part of the lime handling system that was installed as part of the May 23, 2005 minor Title V permit revision.

Note that these above additions will not result in a significant change in emissions.

**Regulation Applicability:**

Emission Unit 09-001 Spreader stoker coal-fired indirect-heat-exchanger

401 KAR 61:015 addresses applicable requirements and allowable emissions in the Title V permit and there are no changes due to this revision. Instead only a change to the existing limitations regulated by 401 KAR 52:020 will be to cap the HCl emissions to 9.0 tons/yr.

**Monitoring, Record Keeping and Reporting Requirements:**

Emission Unit 09-001 Spreader stoker coal-fired indirect-heat-exchanger

The monitoring, recordkeeping and reporting (MRR) requirements will have the additional requirement to monitor, record and report boiler HCl emissions on a monthly basis. Based on test information submitted to KYDAQ on Jan. 20, 2006 that relates HCl control to lime feed rate, this relationship and the monthly coal usage will be used to estimate monthly HCl emissions. These calculated monthly and 12-month rolling basis will be determined by the equation:

$$\text{Monthly HCl Emissions} = C \times 3.48(\text{lbHCl/ton coal}) \times [1 - (7e^{*} L^{**} - 0.02162L^{***} + 2.3306L^{****}) / 100]$$

where \* = -5

\*\* = 3

\*\*\* = 2

\*\*\*\* = -12

C = coal usage (tons/month)

L = average lime feed rate (lb/hr)

For opacity monitoring from the coal boiler/baghouse stack the permittee shall perform a qualitative visual observation of the opacity of emissions from the stack on a daily basis and maintain a log of the observations. If any visible emissions are seen, then opacity must be determined by U.S. EPA Reference Method 9 and initiate an inspection of the control equipment for any necessary repairs.

For monitoring and maintenance requirements of the baghouse, the permittee shall monitor the baghouse differential pressure and temperature; and other representative operation parameters; and visible emission observations of the stack plume. The lime injection and baghouse systems shall be operated to maintain compliance with permitted emission limitations in accordance with manufacturer's specifications and/or standard operating practices.

#### **EMISSION AND OPERATING CAPS DESCRIPTION:**

The permittee (Jim Beam-Booker Noe Distillery), in order to preclude applicability of the Maximum Achievable Control Technology (MACT) for National Emission Standards Hazardous Air Pollutants (NESHAPS) for Industrial Commercial and Institutional Boilers and Process Heaters of 40 CFR 63.7545 (b), shall limit source wide HAPs emissions to less than 9 tons/year (tpy) for any individual HAP pollutant and 22.5 tons/year (tpy) for any combination of HAP pollutants. For Emissions Unit 09 (09-001) Indirect Heat Exchanger HCl emissions shall not exceed 9 tons/year.

#### **Past Permitting Action: For Minor Revision To Title V Permit --V-03-009 R3**

Jim Beam Brands Co. has applied to the Kentucky Division for Air Quality for a minor revision of the Title V permit for its Booker Noe Distillery located in Boston in Nelson County, Kentucky. The proposed minor revision includes the following:

- Replacement of an existing mash cooler with a new larger mash cooler. Emission Unit 02-001: Mash Cooler;
- The reconfiguration of existing distillation equipment. Emission Unit 02-002: Distillation;
- Replacement/modification of existing coal handling system. Emission Unit 09-003: Coal Handling System;
- The installation of three new fermentation tanks. Emission Unit 02-001: Fermentation Process.

The existing mash cooler is being replaced with a new larger mash cooler unit, to accomdate distillery expansion. Since the mash cooler is not a pollutant generating activity it qualifies as an insignificant activity per 401 KAR 52:020, Section 6.

Reconfiguration of the existing distillation equipment is an operating change and will not result in a change in emissions. Also, replacement/modification of existing coal handling system qualifies as an insignificant activity per 401 KAR 52:020, Section 6 and is listed as insignificant activity #17 in the permit.

Jim Beam proposes to add three new 50,000 gallon fermentation tanks to its operation. These will not be used until the distillery expansion is complete near January 2008, but the phased construction process being performed by Jim Beam necessitates that they begin in 2006.

#### **Regulation Applicability:**

Emission Unit 02-001: Mash Cooler no changes due to this modification.

Emission Unit 02-002: Distillation no changes due to this modification.

Emission Unit 09-003: Coal Handling System the new system, an insignificant activity per 401 KAR 52:020, Section 6, is subject to 401 KAR 63:010 (Fugitive Emissions) that provides guide lines for aid in prevention and control of air emissions. However there are no quantitative limitations.

Emission Unit 02-001: Fermentation Process the new fermenters are subject to general provisions of 40 KAR 52:020 and have no specific limitations. Existing Title V permit addresses applicable requirements of existing sources, that are identical for the new fermenters.

### **Monitoring, Record Keeping and Reporting Requirements:**

Emission Unit 02-001: The same as in the current operating permit.

Emission Unit 02-002: The same as in the current operating permit.

Emission Unit 09-003: The same as in the current operating permit.

Emission Unit 02-001: Fermentation Process alcohol production from the existing fermenters is monitored and recorded on a monthly basis. The new fermenters production will be included in these monthly records.

### **Past Permitting Action: For Minor Revision To Existing Title V Permit --V-03-009 R2:**

Jim Beam Brands Co. has applied to the Kentucky Division for Air Quality for a minor revision on the Title V permit for its Booker Noe Distillery located in Boston in Nelson County, Kentucky. The minor revision to the existing permit includes the installation of a baghouse, associated lime injection system and new ash handling system on the existing coal-fired boiler. The baghouse, lime injection system and stack installation will replace the existing cyclones, exhaust fan and stack and will not result in an increase in emissions. The ash handling system which will reduce fugitive emissions of particulate matter (PM) relative to the current ash handling process, will result in estimated potential PM emissions of 1.5 tons per year (tpy) and qualifies as an insignificant activity per 401 KAR 52:020, Section 6.

### **Regulation Applicability:**

Pursuant to 401 KAR 52:020 Section 6, the new ash handling system insignificant activity per, and is subject to 401 KAR 59:010, New Process Operations. This includes a standard for both particulate matter (PM) and opacity (401 KAR 59:010, Section 3). The allowable emission rate for PM is 2.34 lb/hr, on a three hour average and opacity equal to or less than twenty (20) percent. The baghouse does not have an applicable regulation however, there are monitoring, recordkeeping and reporting requirements listed below.

### **Monitoring, Record Keeping and Reporting Requirements:**

In addition to the existing permitted requirements, the source shall install, calibrate, maintain and operate according manufacturer's specification a monitoring device for the continuous measurement of the pressure drop across the baghouse. The permittee shall perform weekly inspection of the baghouse to ensure that there are no broken/torn bags. The permittee shall record the pressure drops across the baghouse on a daily basis

### **Past Permitting Action: Revised Source wide Permit --V-03-009 R1**

The source is a distillery that makes distilled spirits. Grain is unloaded and conveyed to hammermills where it is ground. The grain is fed into mash cookers along with water, and the grain starches are converted to sugars by heating. The cooked grain/water mixture is fed into fermenter vessels as a batch operation to convert the sugars to ethanol. After an appropriate residence time, the mixture is processed through distillation columns and condensers. The condensed liquid is fed to spirits tanks and then gauged at the cistern tanks prior to barrel filling. The spent stillage is then dried with a ring dryer and put into a storage room. Whiskey from the cistern tanks is put into barrels until the appropriate age is reached. The barrels are then gravity dumped, rolled, and rinsed at the dumping station. After dumping, the whiskey is fed to the regauge tanks, where it may be processed and sent to be loaded for shipment.

### **Comments:**

The Distillery is proposing a significant revision to their Title V permit No. V-03-009. The projected emissions increases from the modification would exceed Prevention of Significant Deterioration (PSD) regulations. However, they propose to accept an operating limitation in order to "cap-out" of PSD requirements. The following modifications are proposed.

Emission Unit	Ky EIS ID	Emission Unit Description	Process Modification
03	03-001	Spent Stillage: tanks, centrifuges, evaporators	Relocate centrifuges & tanks to new dryhouse. Install larger evaporator.
04	03-002	Spent grain drying	Replace existing dryer with natural gas dryer and cyclone collectors.
04	03-003	Spent grain drying	Replace existing Aerator Cyclone with DDGS Product Cyclone with Baghouse.
05	03-004	Distiller's Dried Grains (DDGS) Silos & Process Cyclones	Construct 2 silos with cyclones and common baghouse. Relocate 1 silo and cyclone. Remove 2 existing silos.
05	03-005	DDGS Loading	Replace existing DDGS loading equipment with new (conveyors, etc.)

06	04-002	Barrel Aging	Remove existing Warehouse N. Construct 4 new warehouses over next 2 years. Warehouse X,Y & Z - 2004 Warehouse AA - 2005
07	005-01	Fuel Storage	Remove existing #6 Fuel Oil tank. Use existing (2) Propane tanks as back Up fuel source.
07	005-02	Indirect heat exchanger	Remove existing #6 Fuel Oil boilers (2). Install (1) new natural gas indirect heat exchanger.
08	005-03	Indirect heat exchanger	Remove existing #6 Fuel Oil boilers (2). Ky EIS 005-03 eliminated.

The net emissions increases from the process modifications are shown in Table A-1 for each criteria pollutant. Based on this analysis (Projected Potential-to-Emit minus Baseline Actual Emissions), PSD emission increase thresholds are exceeded for VOC, CO & NO<sub>x</sub>. Note that the increases are prior to imposing requested operating limitation.

**Table A-1** PSD Net Emission increase Thresholds (tons per year)

		VOC	CO	NO <sub>x</sub>	SO <sub>2</sub>	PM	PM <sub>10</sub>
Emission Unit 03	Tons/yr	58.86	0.0	0.0	0.0	0.0	0.0
Emission Unit 04	Tons/yr	43.64	33.07	2.69	.07	10.21	10.21
Emission Unit 05	Tons/yr	0.0	0.0	0.0	0.0	6.27	1.42
Emission Unit 07/08	Tons/yr	2.15	35.03	81.69	.04	2.81	2.81
Total	Tons/yr	104.65	68.09	84.38	.12	19.29	14.44

In order to avoid triggering PSD thresholds for the above listed criteria pollutants, Jim Beam is requesting an operating limitation. Based on the emissions inventory analysis, VOC and NO<sub>x</sub> are the first pollutants that trigger PSD thresholds. Therefore, operating limitations will be imposed that limit these emissions.

**EMISSION AND OPERATING CAPS DESCRIPTION:**

This source is requesting that these production processes affected by this modification be limited for VOC and for NO<sub>x</sub> emissions to 35 tons each in any 12 month rolling average in order to ensure the non-applicability of 401 KAR 51:017 (PSD). The facility's remaining production processes in the Title V permit are not changing.

The source will also demonstrate sulfur content of fuel by requiring vendor certification.